



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/857,803	06/11/2001	Hiroji Aga	109725	2312

25944 7590 08/28/2002

OLIFF & BERRIDGE, PLC
P.O. BOX 19928
ALEXANDRIA, VA 22320

EXAMINER

ESTRADA, MICHELLE

ART UNIT	PAPER NUMBER
----------	--------------

2823

DATE MAILED: 08/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/857,803

Applicant(s)

AGA ET AL.

Examiner

Michelle Estrada

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 6-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yamamoto (JP-10275905) and Takada et al. (JP-10335616).

Yamamoto discloses a method for producing an SOI wafer by the hydrogen ion delamination method comprising at least a step of bonding a base wafer (5) and a bond wafer (1) having a micro bubble layer formed by gas ion implantation (See fig. 1c) and a step of delaminating a wafer having an SOI layer (2) at the micro bubble layer as a border, wherein, after the delamination step, the wafer having an SOI layer is subjected to a hydrogen RTA treatment.

Yamamoto does not disclose cooling the wafer, and a heat treatment of a batch furnace.

Takada et al. discloses a semiconductor substrate (11); forming an insulating layer (11a); implanting hydrogen ions into the semiconductor surface; semiconductor substrate (11) is joined to a support substrate (12); the resulting structure is subject to thermal treatment for delamination; and after delamination the laminate (13) is subjected to a thermal treatment (See abstract). The combination teaches annealing by either furnace or RTA. It would have been within the scope of one of ordinary skill in the

Art Unit: 2823

art to use either one (furnace or RTA) for the first part of the heating step and the other one for the rest of the heating step. ^{because} A cooling step would occur after RTA treatment upon removal of the light source.

It would have been within the scope of one of ordinary skill in the art to combine the teachings of Yamamoto and Takada et al. to enable formation of part of the heat treatment of Yamamoto. Also, It would have been within the scope of one of ordinary skill in the art to use hydrogen in the heating step of Takada et al. because it would be use to eliminate the roughness in the surface of the wafer after the delamination step as described by Yamamoto.

Applicant argues that either reference, alone or in combination, teaches the benefits being provided by a two-stage heating process as claimed. However, it is not necessary that the references disclosed the same advantages as those of the instant invention. It is sufficient that the same materials are treated in the same manner.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Takada et al. was not disclosed to teach having hydrogen in the heating step. Furthermore, hydrogen or argon could be present in a vacuum atmosphere.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon

Art Unit: 2823

hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Yamamoto (JP-10275905) and Takada et al. (JP-10335616) as applied to claims 1 and 2 above, and further in view of Adachi et al. (6,074,479) and Wolf et al. (Vol. 1).

The combination of Yamamoto and Takada et al. does not disclose that the wafer is a CZ wafer of which COPs (Crystal Originated Particles) at least on surface are reduced is used as the bond wafer, and that the CZ wafer is produced from a single crystal ingot.

Adachi et al. discloses a wafer, which is a CZ wafer of which COPs (Crystal Originated Particles) at least on surface are reduced (Col. 1, lines 25-30). It would have been within the scope of one of ordinary skill in the art to employ the CZ wafer of Adachi et al. to provide the bond wafer of the combination and further enhance quality of the product.

Wolf et al. (Vol. 1) discloses that the CZ wafer can be produced from a single crystal ingot (See pages 23-25).

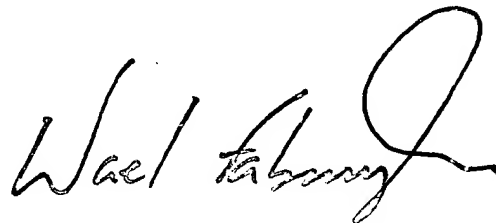
Art Unit: 2823

It would have been within the scope of one of ordinary skill in the art to produce the CZ wafer of Wolf (Vol. 1) to enable the bond wafer of the combination of Yamamoto, Takada et al. and Adachi et al. to be provided.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Estrada whose telephone number is 703-308-0729. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 (7724, 3431 and 3432) for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



SUPERVISORY PRINCIPAL EXAMINER
TECHNOLOGY CENTER 2000



MEstrada
August 23, 2002